Heroes and housewives: The role of gender and gender stereotypes in parenting and child development

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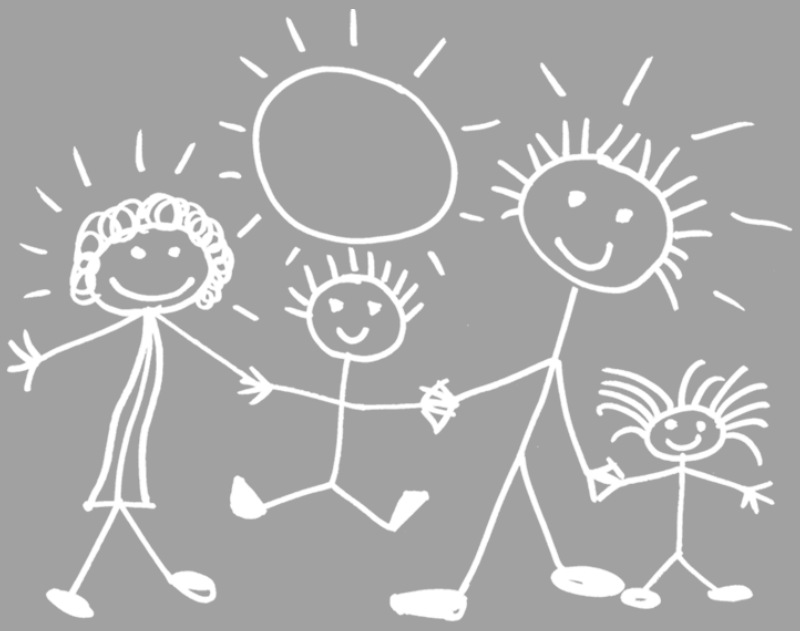

The Gendered Family Process Model: An Integrative Framework of Gender in the Family

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Gender is one of the most important organizers of social life (Blakemore, Berenbaum, & Liben, 2009), from the cradle to the grave. It shapes a large part of children's identity development, and influences the way they are talked to, the way they are parented, the opportunities they are provided with, and people's reactions to certain behaviors, hobbies, interests, and play styles. Children's gender development can be studied in different contexts, such as the family context, the school context, the peer group, and in relation to agents implicated in the gender socialization process, such as parents, siblings, teachers, peers, and the media (Blakemore et al., 2009). In the current review the focus will be on gender development of children and adolescents in the family context, because family processes are crucial factors in gender development, providing the first gender-related experiences that children incorporate in their gender concepts (Bem, 1981), which in turn shape the influence of other socializing agents.

Several general and broad theories of child or gender development have been applied to gender socialization processes in the family context (i.e., evolutionary theories, Trivers, 1972; social role theory, Eagly, Wood, & Diekman, 2000; social learning theories, Bandura, 1977; Bussey & Bandura, 1999). However, these theories do not specifically address gender-related family processes. There are also some family-context frameworks or models that mainly focus on very specific gender-related aspects or processes in the family system (i.e., gender schema theory, Bem, 1981, 1983; reciprocal role theory, Siegal, 1987). Comprehensive explanatory models combining biological, social, and cognitive perspectives on gender development are lacking, although they are essential for the continuation and expansion of the study of gender in the family context and for the understanding of child gender development. Therefore, in the current review we present the Gendered Family Process model (GFP-model), an integrative research framework of gender-related family processes.

Theoretical Framework and Explanatory Model

The Gendered Family Process model (see Figure 6.1) is based on family systems theories (e.g., Whitechurch & Constantine, 1993), biosocial perspectives on the family (e.g., Troost & Filsinger, 1993), Bronfenbrenner's ecological theory of child development (Bronfenbrenner, 1979), and more specific biological, social, and cognitive theories about gender development (i.e., hormonal perspectives, social role theory, social learning theory, gender schema theories). In family systems theories and biosocial family theories the family is viewed as a system encompassing both biological and social factors. Understanding of gender-related family processes requires considering the family as a whole rather than as "conglomerates of separate individuals" (Whitechurch & Constantine, 1993, p. 340), and attention to both biological and social or psychological factors. Thus, an adequate framework should

take into account all members of the family and all relations between family members.

Bronfenbrenner's ecological theory of child development states that the family system is not an isolated system, but is nested in and influenced by the larger societal and cultural environment (Bronfenbrenner, 1979). In addition, the small family system consisting of parents and their children is also embedded in an extended family context (i.e., grandparents, uncles, aunts, cousins, nieces, nephews), which may have an influence on gender-related processes in the smaller family context (McHale, Crouter, & Whiteman, 2003). The GFP-model focuses on the nuclear family (i.e., microsystem and mesosystem), the extended family (i.e., exosystem), and the larger cultural context (i.e., macrosystem).

Biological perspectives on gender-related family processes focus mostly on the influence of (prenatal) hormones on children's gender development and on the influence of, e.g., concurrent testosterone levels on fathers' and mothers' behavior in the family context (Hines, 2005). Social approaches, like social role theory and socialization theories (Bandura, 1977; Bussey & Bandura, 1999; Eagly et al., 2000), address gender-related socialization practices within the family context, such as modeling, shaping, or observational learning, that affect both parent and child gender cognitions and behaviors. Finally, cognitive theories about gender, like gender schema theories (i.e., Bem, 1981, 1983; Martin & Halverson, 1981, 1987), propose that children and parents incorporate all gender-related information from the environment (e.g., parents, siblings, child, extended family members, broader society and cultural environment) into gender concepts that will influence future behavior.

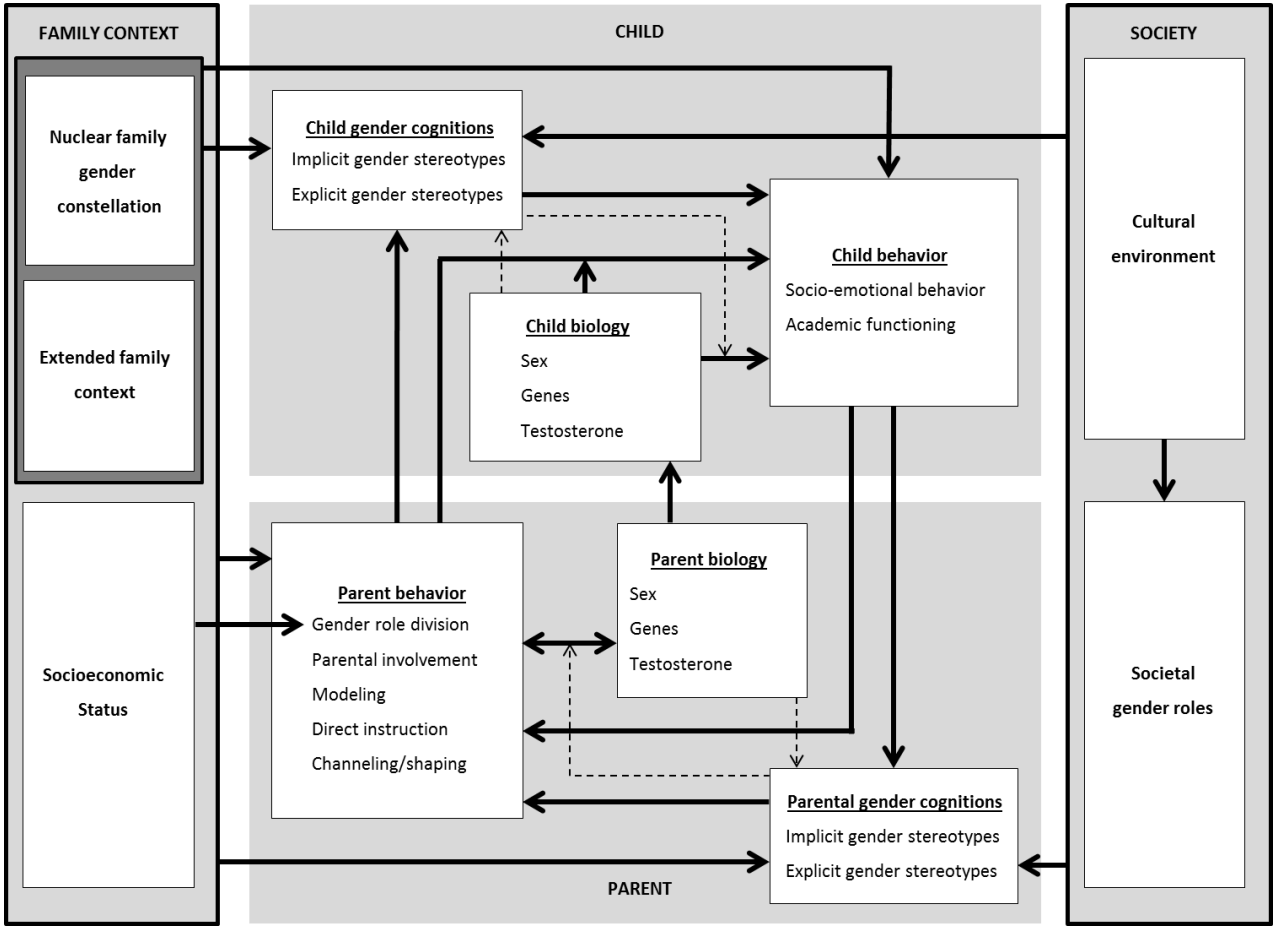

Figure 6.1 The Gendered Family Process Model.

Note to Figure 6.1. The light-grey boxes comprise subsystems (in white blocks) of the family context, the larger societal context, the child level, and the parent level. The dark-grey box refers to the combined influence of the nuclear and extended family. Arrows that originate from a light-grey or dark-grey box (e.g., arrow from family context to parent behavior) indicate that there is a combined influence of several subsystems on a gendered process. Arrows that originate from a white box (e.g.., arrow from child biology to child behavior) indicate that a subsystem has a specific effect on another construct in the model. Arrows that point to a specific construct within a white box (e.g., socioeconomic status to parental gender role division) indicate that the influence is only on this specific construct within the subsystem. Dashed arrows (e.g., arrow from parent biology to parent gender cognitions) represent theoretically plausible associations for which empirical evidence is absent or scarce.

Biological Perspectives: The Role of Parent and Child Biology in Family Process

Two types of biological perspectives can be distinguished; distal perspectives that are concerned with evolutionary processes behind the development of differentiated gender roles, and proximal perspectives that focus on mechanisms such as genetics, or hormones, that are directly associated with gender differences.

Evolutionary Perspectives

Background. Evolutionary theories, and especially the concepts of parental investment and sexual selection, may provide rationales for gender differences in behavior for both parents and children in the family context (Hyde, 2014). Evolutionary perspectives state that not only biological but also psychological characteristics that maximize the survival of the species through natural and sexual selection will become increasingly common in next generations. They also assume that different behaviors are adaptive for males and females (e.g., Buss & Schmitt, 1993). Specifically, parental investment addresses any parental behavior or investment directed to the offspring that benefits the offspring, but may also be detrimental to the parent's own future condition, survival, or further reproductive output (Trivers, 1972). Human mothers biologically invest more in their children than human fathers (e.g., egg cells are more precious than sperm cells , nine-month pregnancy, delivery). At birth, it is to the advantage of the person who already invested most in the offspring to take care of it (Cassidy, 1999). This may explain why mothers' involvement in child care is much more intensive than that of fathers. This difference in child-care involvement may in turn lead to differences in other domains (e.g., gender roles, working outside the home, behavior repertoires, Hyde, 2014). Due to the lower parental investment of males compared to females, there is a high degree of competition among males for females mates. In the context of inter-male competition aggressive behavior can be considered an adaptive trait, because males who are highly aggressive typically have more mating success than less

aggressive males. This rationale is often used to explain gender differences in aggression (e.g., Archer, 2004).

Application to family process. The evolutionary perspective can also be specifically applied to gender-related processes in the family context. Gender-differentiated parenting may have common grounds with the evolutionary perspective. From an evolutionary perspective one might argue that the differential treatment of male and female offspring is beneficial for the organism's survival and reproduction. This adaptive effect of treating male and female offspring differently might be closely related to its consequences on the behavior of male and female offspring (i.e., gender differences). It is possible that via gender-differentiated treatment parents try to emphasize the already present biological predispositions of their male and female offspring to increase their chances of reproduction and to prepare them for the roles they are expected to fulfill in society or family life. For example, it might be advantageous for parents to reinforce the biological predisposition towards aggression in their male offspring, because it will enhance the reproductive success of the offspring by being able to compete successfully with other males for female mates.

In light of this evolutionary perspective one would expect gender-differentiated parenting to be found across species and cultures. There is indeed evidence that parents treat male and female offspring differently with regard to anger displays, holding, and weaning in monkeys (for a review see LaFreniere, 2011), weaning and defense behaviors in blank voles (Koskela, Mappes, Niskanen, & Rutkowska, 2009), and licking and grooming in rats (Champagne, Francis, Mar, & Meaney, 2003; Moore & Morelli, 1979). In rats this difference was more readily observed within litters than between litters (Champagne et al., 2003). Meta-analytically parent's differential control of boys and girls was found across different cultures (Endendijk, Groeneveld, Mesman, & Bakermans-Kranenburg, 2014). However, variations in gender-differentiated parenting patterns have been found between cultures, which were related to cultural differences in gender roles (Low, 1989).

Representation in the GFP-model. Although appealing in many ways, the evolutionary perspective is often criticized for being too simplistic and for the difficulty of testing its predictions empirically (e.g., Blakemore et al., 2009; Eagly & Wood, 1999). Also, the evidence with regard to the universality of certain gender differences or gender-related processes in the family context seems to be mixed (Archer & Lloyd, 2002; Eckes & Trautner, 2000). Therefore, the evolutionary processes related to gender were not included in the explanatory model. In the model we focus on the proximal biological mechanisms that are more readily testable.

Proximal Biological Mechanisms

Background. The effects of prenatal levels of gonadal hormones (i.e., testosterone, estrogens) on behavior are the most extensively studied factors in gender

development research (Hines, 2005). In general prenatal testosterone levels are higher in human male fetuses than in female fetuses from about weeks 8-24 of gestation (Hines, 2005). This same period is also characterized by rapid brain development (Hines, 2005). Already in 1966 Hamburg and Lunde reviewed the evidence with regard to hormonal influences on gender development (Hamburg & Lunde, 1966). They concluded that in children with endocrine abnormalities who were genetically of a different sex than their assigned sex, socialization influences and rearing were more important for gender role development than their genetic sex.

Not only the prenatal levels of testosterone might be implicated in the child's gender development. The rise of testosterone levels during puberty also has important "organizational" and "activational" effects on the adolescent's brain and behavior (Berenbaum & Beltz, 2011; Peper, Hulshoff Pol, Crone, & Van Honk, 2011). Organizational effects are thought to be the more permanent effects of testosterone on brain structures and related behaviors, whereas activational effects are the more temporary alterations of brain functioning and behavior related to circulating levels of hormones (Berenbaum & Beltz, 2011). In an extensive review of the literature, Berenbaum and Beltz (2011) found little evidence of organizational effects of circulating testosterone levels during puberty on behavior, only on gender identity. There is also some evidence that rise in sex steroids during puberty are linked to gender-typical behavior problems that generally emerge during adolescence such as depression, eating disorders, and anxiety disorders (for a review see Berenbaum & Beltz, 2011). However, it is unclear whether these effects are organizational or activational. Another mini-review of neuroimaging studies concluded that the changes in sex steroids during puberty are involved in structural reorganization of grey and white matter in the brain (Peper et al., 2011).

It is important to note that children's testosterone levels are for a large part genetically determined (Harris, Vernon, & Boomsma, 1998; Hoekstra, Bartels, & Boomsma, 2006; Caramaschi, Booij, Petitclerc, Boivin, & Tremblay, 2012). Heritability estimates ranged from 66% to 85% (Harris et al., 1998; Meikle, Stringham, Bishop, & West, 1988) for adolescent males and 41% to 52% for adolescent females (Harris et al., 1998; Hoekstra et al., 2006). Non-shared environmental influences explained the rest of the variance (Harris et al., 1998; Hoekstra et al., 2006). When measures were corrected for daily fluctuations in testosterone levels and measurement error, the variance in testosterone levels would be practically entirely explained by genetic effects (Hoekstra et al., 2006). In infancy variation in testosterone levels was entirely explained by shared (prenatal) environmental factors (57%), such as maternal hormone levels, maternal smoking behavior and diet during pregnancy, and non-shared environmental factors (43%), such as position in the womb or differential parenting practices (Caramaschi et al., 2012). The prenatal testosterone environment is also influenced by mothers' circulating testosterone levels. There is evidence from studies of pregnant women

with elevated androgen levels or women who used androgenic hormones during pregnancy, that testosterone can pass from the maternal system to the fetus as indicated by higher fetal testosterone levels (Barbieri, 1999; Ehrhardt & Money, 1967). In contrast, studies comparing mothers carrying fetuses with or without congenital adrenal hyperplasia (CAH; genetic disorder in which fetus produces extremely high levels of testosterone) or mothers carrying male or female fetuses found no differences in maternal testosterone levels between the groups, indicating that testosterone does not appear to pass from the fetus to the mother (Hines et al., 2002; Meulenberg & Hofman, 1991).

Next to the 'classic' and dominant focus on the influence of gonadal hormones in the field of gender development, there is an emerging view that direct genetic effects play an important role as well (Ngun, Ghahramani, Sánchez, Bocklandt, & Vilain, 2011). Genetic effects on gender development are difficult to investigate, but evidence is starting to emerge indicating that genes on both the X and Y chromosome are associated with behavioral gender differences (for a review see Blakemore et al., 2009; Ngun et al., 2011). For example, manipulated mice that are genetically male, but hormonally female (i.e., deletion of *Sry* gene on Y chromosome responsible for testis formation), show aggression and parenting behaviors like pup retrieval at the level of normal male mice (Gatewood et al., 2006). These results indicate that genes on the Y chromosome other than *Sry* have an effect on aggression and parenting behavior of males. In addition, studies of manipulated mice with one X chromosome found increased anxiety in 1X mice compared to 2X mice, indicating X gene(s) to be involved in modulating fear reactivity (Cox, Bonthuis, & Rissman, 2014). There are humans with chromosomal abnormalities similar to these mice. Research from males with Klinefelter syndrome (extra X chromosome) has found that these men show impaired social processing, verbal abilities, and cognitive functioning compared to normal controls (Cox et al., 2014). Girls with Turner syndrome (absence of or abnormality in one X chromosome) have been found to be at higher risk for autism, and have impaired visuospatial skills, memory, and attention (Cox et al., 2014). So, there is also evidence from studies with humans for behavioral effects of sex-linked genes on the X chromosome. Interestingly, both the absence of an X chromosome in girls and the presence of an extra X chromosome in boys seem to be associated with more male-typical behavior profiles.

Application to family process. Recent studies examining the association between testosterone levels and gender differences in behavior have demonstrated that girls who are exposed to high levels of testosterone prenatally (i.e., genetic disorder congenital adrenal hyperplasia; CAH) show increased male-typical play and interests and reduced female-typical play and interests (Auyung et al., 2009; Berenbaum & Beltz, 2011; Hines, 2005). Moreover, natural variations in prenatal testosterone levels have also been linked to variations in girls', but not boys', gender-role behavior (Cohen-Bendahan, van de Beek, & Berenbaum, 2005). The more consistent

association between prenatal testosterone variability and gender-role behavior in girls than boys might be due to the differential socialization of boys and girls (Hines et al., 2002). For example, parents reinforce gender-typical behaviors more in boys than in girls, whereas they discourage cross-gendered behavior more in boys than in girls (Hort, Fagot, & Leinbach, 1990; Leaper, 2000). So, a hormonal predisposition towards cross-gendered behavior might be counteracted more by parental socialization influences in boys than in girls (Hines et al., 2002).

In rhesus monkeys there is ample evidence that the social environment modifies the effects of prenatal hormones on behavior (Wallen, 1996). Money and Ehrhardt (1972) were among the first researchers examining the interplay between biological and environmental factors in human gender development. In their work they focused especially on the influence of gonadal hormones on prenatal development and puberty. They theorized that the differential exposure of boys and girls to gonadal hormones in the womb is related to subtle gender differences in brain development and behavior, which together with socialization influences would play a critical role in gender development.

However, in the child development literature there are few studies empirically testing the combined influence of prenatal testosterone levels and socialization influences. We only know of one study examining this in a sample of normally developing children (Booth, Johnson, Granger, Crouter, & McHale, 2003). They showed that when parent-child relationship quality was high, the association between testosterone and risk-taking behavior or depressive symptoms was less strong than when parent-child relationship quality was low (Booth et al., 2003). Most studies have been conducted on children with CAH, examining the hypothesis that it is not only the high prenatal testosterone causing the boy-typical behaviors in CAH girls, but the hormonally induced cross-gendered appearance of girls with CAH that leads to differential treatment by parents, which in turn encourages cross-gendered behavior tendencies. The results of these studies are mixed. Most studies found that parents did not treat their daughters with CAH differently than they treated their unaffected daughters (for a review see Cohen-Bendahan et al., 2005). One study found that both mothers and fathers encouraged girl-typical toy play more in their daughters with CAH than in their unaffected daughters (Pasterski et al., 2005), whereas another study showed that parents encouraged more boy-typical and less girl-typical toy play in girls with CAH compared to unaffected girls (Wong, Pasterski, Hindmarsh, Geffner, & Hines, 2013). It should be mentioned that most of these studies used parental self-report or small samples. Differential parenting occurs mostly at an unconscious level and is therefore more likely to be captured with observation methods than with self-report measures (Culp, Cook, & Housley, 1983).

A similar mediational mechanism with socialization mediating the association between prenatal testosterone and child behavior that is found for girls with CAH might also play a role in the gender development of normally developing

children. We can elaborate on this idea from the perspective of studies on gene-environment correlation (rGE, Plomin, DeFries, & Loehlin, 1977; Scarr & McCartney, 1983). With regard to the family context three types of rGE have been proposed (Plomin et al., 1977; Scarr & McCartney, 1983). First, with passive rGE parents provide both the genes and the environment that lead to certain child behaviors. For example, the association between negative parenting practices and children's disruptive behaviors can be seen as a reflection of parents' and children's shared genetic tendency towards disruptive behaviors and the negative environment parents create with their disruptive behaviors. Second, active rGE refers to children's active selection of their environments based on their genetic predispositions. For example children with a genetic predisposition towards disruptive behaviors or difficult temperament may actively seek conflict with their parents. The third type, evocative rGE refers to the evocative effect that genetically predisposed child characteristics have on parent behavior. For example, children with genetically-driven tendencies to be cooperative and/or prosocial would be more likely to elicit positive reactions from their parents, while children with genetically-driven tendencies toward disruptive behavior would be more likely to elicit negative reactions from their parents (Pardini, 2008).

There is a large body of research mostly using self-report data that suggests genetic child-driven effects on parenting (see for meta-analytic evidence Klahr & Burt, 2013). Large population-based longitudinal twin studies have shown that children with a cooperative and/or prosocial predisposition are more likely to elicit positive reactions from their mothers and fathers, whereas children with tendencies toward disruptive behavior elicit negative reactions from their mothers and fathers (e.g., Boeldt et al., 2012; Jaffee et al., 2004; Larsson et al., 2008). Also several adoption studies found that adopted children with a genetic predisposition towards antisocial behavior (from their biological parents) evoke more harsh and inconsistent discipline from their adoptive mothers and fathers (e.g., Ge et al., 1996; Riggins-Caspers, Cadoret, Knutson, & Langbehn, 2003). It should be mentioned that the effects in these studies were modest. With the results from these studies in mind, one can argue that hormonally or genetically induced differences in behavior of boys and girls elicit differential treatment by parents, which in turn might enhance the biologically predisposed gender differences in children's behavior.

Regarding the influence of biological factors on parental behavior, levels of circulating gonadal hormones have been associated with gender differences in aggression and cognitive abilities in adolescence and adulthood (Blakemore et al., 2009). Normal testosterone levels are higher in men than in women from puberty onwards. Levels of circulating testosterone have also been specifically linked to family processes. In the parenting context the influence of testosterone is often presented within a trade-off framework that contrasts low testosterone levels and parenting with high testosterone levels and competitive challenges or mating (Van

Anders, Tolman, & Volling, 2012). This trade-off is then framed via the "challenge hypothesis" which, when extended to the family context, predicts that high testosterone levels inhibit parenting, and that cues associated with children, child care, or parenting decrease testosterone levels (Wingfield, Hegner, Dufty, & Ball, 1990) in both mothers and fathers (Gettler, McDade, Feranil, & Kuzawa, 2011; Kuzawa, Gettler, Huang, & McDade, 2010), although the vast majority of studies examining the influence of circulating testosterone on behavior have been conducted in men.

A number of studies found support for the challenge hypothesis. For example, marriage and fatherhood have been found to be consistently associated with lower levels of circulating testosterone (Gray, Kahlenberg, Barrett, Lipson, & Ellison, 2002; Gettler et al., 2011). Moreover, more involvement in child care and time spent with children were associated with subsequent lower testosterone levels in fathers (Gettler et al., 2011; Storey, Noseworthy, Delahunty, Halfyard, & McKay, 2011). However, studies examining testosterone changes in response to baby cues have shown that baby cries actually increase testosterone levels in men (Fleming et al., 2002; Storey et al., 2000). In addition, administration of testosterone enhances, rather than suppresses, neural responsivity to baby cries in women (Bos et al., 2010). These divergent results to baby cries can be interpreted in light of the Steroid/Peptide Theory of Social Bonds which states that "only those infant/parent contexts that involve nurturance will decrease testosterone; those that involve competitions (real or imagined) will increase testosterone" (Van Anders et al., 2012, p. 31). A recent study that examined testosterone changes in men in response to an interactive baby doll paradigm (Van Anders et al., 2012) found evidence for the Steroid/Peptide Theory of Social Bonds. It was demonstrated that baby cries do decrease testosterone levels in men, but only when cries could be terminated by nurturant responses. In contrast, baby cries to which men were not able to respond with nurturing behaviors (i.e., listen to playback of baby doll's sounds) increased testosterone levels.

These studies seem to suggest that more paternal involvement leads to lower circulating levels of testosterone and not the other way around (i.e., low testosterone levels lead to more paternal involvement). However, there are also studies providing evidence for the proposition that (genetically based) variations in basal testosterone levels can be considered as a more trait-like feature associated with variations in paternal involvement and quality of involvement. For example, lower basal testosterone levels are associated with greater paternal responsiveness (Alvergne et al., 2009), and more optimal father-child behaviors (Weisman, Zagoory-Sharon, & Feldman, 2014). Based on the studies presented above it seems plausible that the association between testosterone and parental involvement is bidirectional. Basal testosterone levels influence parental behavior, but at the same time cues associated with marriage, children, child care, or parenting can lead to short-term or longer-term fluctuations around this basal level. More longitudinal research is necessary to disentangle the precise direction of effects.

Studies that examined testosterone changes in response to child/parenting cues generally have found large individual differences in testosterone variability, with some parents showing almost no change in response to these cues and others showing large changes. Individual differences in testosterone variability might be associated with differences in parental involvement or parenting quality. For example, fathers showing a decrease in testosterone levels in response to marriage or fatherhood, are less likely to divorce or have marital problems (Gray et al., 2002) and are more likely to have a positive father-child relationship (Weisman et al., 2014), compared to fathers showing a smaller or no decrease in testosterone levels. However, these first results remain to be replicated.

Mothers and fathers basal testosterone levels might not only be related to parental involvement, but also specifically to gender socialization practices (Cohen-Bendahan et al., 2005). For example, mothers with high basal testosterone levels may parent their daughters differently than mothers with low basal testosterone levels, possibly because they have opposite-gender interests or reinforce their daughters' male-typical behavior (Cohen-Bendahan et al., 2005). Similarly, fathers with low basal testosterone levels may show more female-typical behaviors and interests or encourage their sons to play with girls' toys.

A very small body of research examined the neurobiological origins of gender schemas or gender stereotypes (Quadflieg & Macrae, 2011). Neuroimaging studies found that gender stereotypes were associated with activity in the brain during social judgment tasks, and especially in regions linked to semantic retrieval and categorization (Mitchell, Ames, Jenkins, Benaji, 2009), regions frequently linked to social cognition (Contreras, Benaji, & Mitchell, 2012), areas associated with evaluative processing and the representation of action knowledge (Quadflieg, Turk, Waiter, Mitchell, Jenkins, & Macrae, 2009). With regard to the influence of gonadal hormones it has been found that testosterone and gender stereotypes have an interactive effect on gender differences in cognition (Hausmann, Schoofs, Rosenthal, & Jordan, 2009) and math performance (Josephs, Newman, Brown, & Beer, 2002), indicating that testosterone only influenced performance when gender stereotypes were activated. It also seems plausible that testosterone levels in parents and children may have a direct influence on their gender cognitions. For example males with low testosterone levels may have more egalitarian gender cognitions than males with high testosterone levels, possibly because they have opposite-gender interests (Cohen-Bendahan et al., 2005) or show less male-typical behavior.

Proximal biological mechanisms in the GFP-model. First, the model includes a direct path from child biology to child behavior, because there is ample evidence that especially the child's prenatal testosterone levels have a direct influence on the child's gender-typical socio-emotional behavior, cognitive skills, and academic achievement. Second, we included a path from child biology, to child behavior, to parent behavior, to child behavior. In this pathway genetically or hormonally

predisposed differences in behavior or temperament of boys and girls evoke differential parental reactions, which in turn enhance biologically predisposed behavioral differences between boys and girls. Third, the model includes an interaction between biology of the child and parental gender socialization behaviors, indicating that the child's biology modifies the influence of parental socialization on child behavior. Regarding the influence of parents' biology, we included a direct path from parent to child biology, because of the heritability of testosterone levels and the influence of maternal testosterone levels on fetal testosterone. There is a bidirectional arrow between parent biology and behavior, because it remains unclear if parenting or becoming a parent influences testosterone levels or if testosterone levels influence parenting behaviors.

The model also includes dashed arrows for associations on which there is an urgent need for more studies. There are interactions between biology and gender cognitions for both parent and child, indicating that testosterone might only influence gender-related behaviors when gender stereotypes are activated. There is also a direct arrow from biology to gender cognitions for both parent and child, representing the possible influence of testosterone on gender cognitions.

Social Approaches: The Parent-Child Relationship

Social Role Theory

Background. Both role theory and social role theory provide rationales for family processes implicated in children's gender development (Eagly et al., 2000; Hosley & Montemayor, 1997). Both theories focus on the historical division in gender roles, and particularly on the female role of homemaker and the male role of economic provider. The male role is characterized by competence, independence, assertiveness, power, and leadership, whereas females are seen as kind, considerate, helpful, nurturing, and caring. According to social role theory "the differences in behavior of women and men [..] originate in the contrasting distributions of men and women into social roles" (Eagly et al., 2000, p 125). More specifically, it is proposed that gender roles and the characteristics associated with these roles lead to stereotypical ideas and expectancies about men and women, that will guide future behavior (Bem, 1981; Macrae & Bodenhausen, 2000). Thus, stereotypical ideas about gender roles will lead to differential treatment of men and women, which in turn lead to gender differences in behavior.

An often-heard concern with social role theory is that the concept of gender roles (i.e., male as economic provider, female as homemaker) is no longer applicable to current-day society. In the last decades a shift in gender role patterns has occurred in most Western societies: mothers' participation in the labor market has increased substantially and fathers take more active roles in their children's socialization

(Cabrera, Tamis-LeMonda, Bradley, Hofferth, & Lamb, 2000; Lamb, 2010). Even though the division of gender roles has become less strict in most modern Western societies, gender roles still fulfill important explanatory purposes. For example, despite the increase of paternal involvement in the family, maternal involvement remains substantially higher: in most Western countries mothers show a two- to threefold investment in time spent on child care compared to fathers (Huerta et al., 2013; The Fatherhood Institute, 2010). Thus, consistent with role theory, mothers continue to be the primary caregivers of young children in most families. Moreover, even though men and women take on the role of economic provider, they have different occupations that are often convergent with the characteristics associated with the historical gender roles (U.S. Department of Labor, 2012). For example, females are overrepresented in educational, caretaking, and nurturing occupations, whereas males are overrepresented in occupations that are associated with power, physical strength, status, and agentic personality characteristics (i.e., management, engineering). So even though some aspects of traditional gender roles have become less salient over time, gender role theory is still very relevant to current-day societies.

Application to family process. The different roles and responsibilities mothers and fathers have in the family may lead to differences in behavior towards their children. Also, the different characteristics associated with the male and female role may result in differences in parenting and parental involvement between mothers and fathers. There is meta-analytic evidence that fathers differ from mothers in speech with their children (Leaper, Anderson, & Sanders, 1998), and evidence for differences between mothers and fathers in sensitivity (e.g., Barnett, Deng, Mills-Koonce, Willoughby, & Cox, 2008; Hallers-Haalboom et al., 2014; Lovas, 2005), and discipline (e.g., Gunnoe & Mariner, 1997; Power, McGrath, Hughes, & Manire, 1994; Tulananda & Roopnarine, 2001). Second, based on social role theory mothers and fathers are expected to use different parenting strategies with boys and girls in accordance with prevailing gender roles. Parenting behavior towards girls would then be more likely to focus on affiliation and interpersonal closeness whereas parenting behavior towards boys would be more likely to focus on assertiveness and dominance. Social role theory also proposes that fathers are more inclined to socialize their children, especially their sons, into the gender roles proposed by society (Eagly et al., 2000). Thus, fathers are expected to use more gender-differentiated parenting than mothers. This proposition was also made by Johnson (1963) in her reciprocal role theory that drew upon the psychoanalytic processes of identification. Meta-analytically there is indeed some evidence that fathers differentiate more between boys and girls than mothers (Lytton & Romney, 1991). However, this meta-analysis has been criticized for using too-broad categories of socialization behaviors, including few observational studies, and not weighing study results by sample size (Keenan & Shaw, 1997).

Social role theory in the GFP-model. Social role theory proposes pathways from society's division in gender roles to parent and child gender cognitions to gender-related behavior of both parent and child. In addition, differences between mothers' and fathers' roles, parenting practices, and involvement in the family are stressed as a consequence of societies' gender roles and associated gender cognitions.

Social Learning Theories

Background. Originating from behaviorism, social learning theories were developed in the 1960s to study the development of social behaviors (Bandura, Ross, & Ross, 1961; Bandura & Walters, 1963). Mischel (1966) was the first to apply social learning principles to children's gender development. Central to these theories are the concepts of imitation/modeling and reinforcement/punishment. Observational learning from available models in the child's environment is an important factor in children's gender development.

Application to family process. In the family context much gender-related information is available for the child to imitate. First, parents create a highly gendered environment for their children by the toys, clothes, activities, and chores they choose for them (Pomerleau, Bolduc, Malcuit, & Cossette, 1990), the books or media they expose their children to (Birnbaum & Croll, 1984; Gooden & Gooden, 2001), and even by the names they give their children (Barry & Harper, 1995). This process is also called 'channeling or shaping' children's gender development (Blakemore et al., 2009; Eisenberg, Wolchik, Hernandes, & Pasternack, 1985). Second, parents are models for gender-typical behavior through their own behaviors, occupations, and interests. In the family context, mothers and fathers have been found to differ on time spend on child care in most Western countries (Huerta et al., 2013; The Fatherhood Report, 2010), the professions they pursue (U.S. Department of Labor, 2012), and their play and interaction styles (Leaper et al., 1998; Paquette, 2004). By observing these differences between mothers and fathers, children will learn how males and females act. Third, parents can provide direct gender-related instruction to their children, for example by the way they talk to their children about gender (Gelman, Taylor, & Nguyen, 2004). To our knowledge only four studies have systematically examined gender socialization via parent-child communication about gender (DeLoache, Cassidy, & Carpenter, 1987; Endendijk et al., 2014; Gelman et al., 2004; Friedman, Leaper, & Bigler, 2007). These studies provided evidence for they idea that talking about gender is an important factor in children's gender development.

Another way in which parents influence the gender development of their children is via gender-differentiated parenting. Parents treat boys and girls differently, which especially in families with both boys and girls sends the message that boys and girls are different. Although the differences are usually small, parents have been consistently found to treat boys and girls differently with regard to physical care in non-Western societies or financial investments in Western societies (for a review see

Lundberg, 2005), emotion socialization (e.g., Chaplin, Cole, & Zahn-Waxler, 2005; Fivush, 1998; Fivush, Brotman, Buckner, & Goodman, 2000), conversations (see meta-analysis by Leaper et al., 1998), risk taking (e.g., Morrongiello & Dawber, 1999; Morrongiello & Hogg, 2004), discipline (see meta-analyses by Endendijk et al., 2014; Lytton & Romney, 1991), and play style (e.g., physical play or pretend play; Lindsey & Mize, 2001; Paquette, Carbonneau, Dubeau, Bigras, & Tremblay, 2003).

With regard to the differential treatment of boys and girls, parents may also respond differently to the same behaviors in boys and girls. This process is distinct from the modeling/imitation processes discussed above in that it focuses more on the social learning processes of reinforcement, punishment, and extinction. In general social learning theory states that responding to behavior (i.e., reinforcement), negatively or positively, will increase the frequency of that particular behavior in the future, whereas ignoring behavior (i.e., extinction) will decrease the frequency of behavior. In the 1970s Maccoby and Jacklin (1974) found very little evidence for the hypothesis of differential reinforcement contingencies for boys and girls when they reviewed the literature on parents' differential reactions to boys' and girls' behaviors. However, since then evidence started to emerge supporting the differential reinforcement contingency hypothesis. For example, parents are more likely to respond positively to girls' than to boys' prosocial behavior (Hastings et al., 2007), to react with increasing harsh discipline to boys' than to girls' difficult or noncompliant behavior (McFadyen-Ketchum, Bates, Dodge, & Pettit, 1996), punish boys more often for their aggression than girls (Eron, 1992), but when the angry and noncompliant behaviors continue they give in to boys more often than to girls (Chaplin et al., 2005; Radke-Yarrow & Kochanska, 1990).

There are some unresolved issues in the literature on gender-differentiated parenting. First, almost all studies adopt a between-family design in which parenting in families with boys is compared with parenting in families with girls. It is essential to examine gender-differentiated parenting within families to take into account the possible influence of between-family differences. Second, although gender-differentiated parenting has been labeled as an important factor influencing child behavior, very few studies have actually examined the link between gender-differentiated parenting and child behavior. One study showed that fathers attended more to girls' submissive emotion than to boys', whereas they attended more to boys' disharmonious emotion than to girls' (Chaplin et al., 2005). Moreover, they found that parental attention predicted later submissive emotions, and disharmonious emotions predicted later externalizing problems. However, they did not formally test for mediation (i.e., parent behavior mediates association between child gender and child behavior). In another study the mediating role of parenting on the association between child gender and child behavior was tested, and it was shown that mothers were more responsive to girls than to boys in a puzzle game, which was related to more happy, engaged, and relaxed behavior in girls than in boys during the puzzle task (Mandara,

Murray, Telesford, Varner, & Richman, 2012). However, these associations were tested concurrently, and initial differences between boys' and girls' behavior may have confounded the results. Third, it is difficult to disentangle child-gender effects on parenting or parental reactions from effects of gender-specific behavioral or temperamental differences. In addition, the direction of effects is often unclear. For example, to date there is too little evidence to determine if the differential treatment of boys and girls results from parental attitudes about how to treat boys versus girls, or as a reaction to biologically predisposed gender differences in child behavior, or a combination of both.

Social learning theories in the GFP-model. Social learning theories propose several ways in which parents can socialize their children with regard to gender, such as channeling, shaping, direct instruction, gender-differentiated parenting, and modeling of their own gender roles and parental involvement. According to these theories there is a direct influence of parental gender socialization practices on child behavior. However, as will become evident in the next section on cognitive theories of gender development, this influence is likely to be at least partially mediated by the child's cognitions about gender. Besides the mediation by the child's gender cognitions it seems likely that socialization pressures keep having a direct effect on child behavior, especially for younger children who are still developing their gender cognitions.

Cognitive Approaches: The Role of Parent and Child Cognitions About Gender

Background

One of the founders of the cognitive perspective on gender development is Kohlberg (1966). In the book *The Development of Sex Differences*, edited by Maccoby (1966), Kohlberg wrote a chapter on the cognitive influences on gender development which set the stage for a new way of investigating gender development. Central to this theory is the idea that children are not passive recipients of all gender-related information from their environments, but instead play an active role in learning about gender-typical behavior and gender-related attitudes. The learning process is characterized by three cognitive stages in which children first acquire gender identity, followed by gender stability, and last gender consistency or constancy. Kohlberg ascribes children's movement through the stages to the increasing complexity of children's cognitive abilities during development.

Gender identity refers to the ability to identify one's own gender and later also other's gender. According to Kohlberg this phase is essential, because it sets the stage for the development of gender-typed behaviors and attitudes. Children need to have awareness of their own gender and other's gender to observe which behaviors are usually carried out by members of their own gender, to model the behavior of

same-gender peers or adults, and to know which behaviors are considered appropriate for each gender. Kohlberg (1966, p.89) stated this sequence as follows: "I am a boy, therefore I want to do boy things, therefore the opportunity to do boy things (and to gain approval for doing them) is rewarding", which is essentially different from the socialization perspective that states that gender-typed behaviors are acquired through the rewarding nature of gender-appropriate behaviors (i.e., I want rewards, I am rewarded for doing boy things, therefore I am a boy). Gender stability and gender constancy, which generally develop a few years later, refer to understanding the fixed nature of gender over time, invariant to changes in appearance or situations.

Gender Schema Theories

In the 1970s and 1980s several versions of gender schema theories were developed independently from each other (i.e., Bem, 1981, 1983; Martin & Halverson, 1981, 1987). It is beyond the scope of the current review to discuss the differences with regard to the focus of these theories. Therefore, we will only describe the overlapping themes in the different versions of schema theory.

Application to family process. In general, gender schema theories propose that people actively incorporate gender-related input from the environment (e.g., parents, siblings, extended family members, broader society and cultural environment) into cognitive structures called gender schemas. These gender schemas influence the attention, perception, and memory of gender-related information in the environment, and even bias future behavior towards males and females. These theories mainly focus on the influence of children's own gender schemas in relation to future behavior. However, its basic premises can also be applied to the intergenerational transmission of gendered ideas in societies and in families. For example, when gender is a salient issue in a family, due to the gender socialization behaviors of parents, this will encourage the continuation of gendered ideas in children, because they incorporate these early gender-related experiences in their own gender schemas.

According to this reasoning, parents have a profound influence on the content of children's gender schemas. However, children also receive gender-related input from other agents such as peers, teachers, and the media (Rose & Rudolph, 2006; Dobbs, Arnold, & Doctoroff, 2004; Gooden & Gooden, 2001; McHale et al., 2003). Therefore, it is likely that the content of parents' and child's gender schemas will be similar but slightly different. Meta-analytically, there is evidence that parent and child gender schemas are related, but the associations are small (Tenenbaum & Leaper, 2002). Thus it is important to not only take parents' gender schemas into account in the study of children's gender development, but also children's own gender schemas which are likely to play a role in gender development above and beyond parents' schemas.

Although gender schema theories provide elegant explanations for the persistence of gender stereotypes and the intergenerational transmission of gendered ideas, the evidence for a link between gender stereotypes and actual parenting behavior in the family context is surprisingly weak (e.g., Fagot, Leinbach, & O'Boyle, 1992; Tenenbaum & Leaper, 2003), with most studies finding no significant associations. The evidence that is supporting the idea of an attitude-behavior link in adults is often found with experimental studies or with highly structured tasks assessing cognitive processes like encoding or memory of, and attention to gendered information (e.g., Frawley, 2008; Habibi & Khurana, 2012; Kee, Gregory-Domingue, Rice, & Tone, 2005; Kroneisen & Bell, 2013; Sherman, Stroessner, Conrey, & Azam, 2005). We only know of a few studies on gender-related parent-child conversation that have found meaningful associations between mothers' gender stereotypes and the way they talk about gender with their children (Endendijk et al., 2014; Gelman et al., 2004; Friedman et al., 2007). For example, mothers with stronger gender stereotypes were more likely to make comments confirming gender stereotypes and to evaluate gender-role inconsistent behavior more negatively than mothers with more egalitarian gender-role attitudes (Endendijk et al., 2014; Friedman et al., 2007).

The lack of an attitude-behavior link for parents may be partly because parents' attitudes are often assessed explicitly (i.e., overtly expressed ideas about men and women), whereas for controversial subjects like gender and race, implicit stereotypes (i.e., operate largely outside conscious awareness) may be better predictors of behavior than explicit self-reported stereotypes (Nosek, Benaji, & Greenwald, 2002). Self-report of gender stereotypes may be biased by social desirability and a lack of awareness of own stereotypes (White & White, 2006). In one of our recent studies fathers' implicit attitudes about gender roles were indeed associated with gender-differentiated parenting practices in the family (Endendijk et al., 2014). One aspect of parents' behavior that might be related to explicit attitudes about gender is parents' direct instruction about gender to their children. Since direct instruction about gender happens more consciously than for example gender-differentiated parenting, this is more likely to be a reflection of parents' explicit attitudes about gender.

Only few studies on stereotype-behavior congruence in children have been conducted (Martin & Dinella, 2012). Children's attitudes about gender are also often assessed explicitly with questionnaires (Gender Attitude Scale for Children, Signorella & Liben, 1985; OAT scales, Liben & Bigler, 2002). One study showed high levels of congruence between self-reported gender stereotypes and preferences for stereotypical masculine or feminine activities of 7 to 12-year-old girls (Martin & Dinella, 2012). Another study focusing on adolescent girls academic achievement found that explicit egalitarian attitudes about gender were related to more math and science motivation (Leaper, Farkas, & Spears Brown, 2012). In addition, implicit math-gender stereotypes predicted academic achievement above and beyond explicit

math-gender stereotypes for both boys and girls, and over and above enrollment preferences for girls (Steffens, Jelenec, & Noack, 2010). So, it appears that both children's implicit and explicit attitudes about gender are associated with child behavior.

More is known about the internalization of parents' gender socialization practices into children's gender cognitions. One study found that the more mothers employed a conformist parenting style (i.e., child has to comply with traditional norms and values) with their daughters, the more traditional the daughters' gender role attitudes were (Ex & Janssens, 1998). In addition, mothers' parenting style was largely influenced by her own gender role attitudes, which suggests a pathway from parents' gender-role beliefs to parent behavior, and from parent behavior to children's gender-role beliefs. Another study that examined the traditionality of parents' occupations, which can be seen as a reflection of their gender roles, showed that the traditionality of mothers' occupations was related to children's gender stereotypes (Barak, Feldman, & Noy, 1991). In addition, mothers and fathers who performed more nontraditional gender-role behaviors in the home had children with less strong gender stereotypes (Turner & Gervai, 1995). To our knowledge there are no studies conducted on the internalization of children's gender-related behaviors into parents' gender cognitions, although according to gender schema theories (Bem, 1981, 1983; Martin & Halverson, 1981, 1987) and family system theories (Whitechurch & Constantine, 1993) it would be expected that children also influence parents' attitudes about gender.

Gender schema theories in the GFP-model. Gender schema theories propose an indirect pathway from parent behavior, to child gender cognitions, to child behavior, as opposed to the direct pathway from parent to child behavior that is proposed by social learning theories. Schema theories also state that both parent and child gender-related behavior is influenced by their gender stereotypes. Moreover, there is not only a path from parents' gender socialization behavior to the child's gender cognitions, it is also likely that parents' gender cognitions are influenced by their children's gender-related behaviors. Implicit and explicit gender role beliefs will have a combined influence on gender-related family processes, except for parents' use of direct instruction about gender, which is likely to be mainly influenced by parents' explicit attitudes about gender. There are also factors outside the immediate family environment that influence the gender cognitions of parents and children. These factors are the focus of the next section of this review.

The Family Context

According to family systems theories (e.g., Whitechurch & Constantine, 1993) and Bronfenbrenner's ecological theory of child development (Bronfenbrenner, 1979) the family system or the child's microsystem includes not only parents, but also siblings,

grandparents, and other extended family members. These family members are not only agents for social learning (Bandura, 1977), but also provide parents and children with gender-related experiences that are incorporated in their gender schemas (Bem, 1981, 1983).

Nuclear Family Gender Composition

Background. Not all families are the same with regard to composition. A structural family characteristic that is especially relevant for gender-related family processes is the family gender composition, which consists of the sibling gender configuration and the parent gender configuration (e.g., single-parent family, two-parent family, heterosexual, homosexual). Although it is often believed that gender might run in families, there is little empirical support for the idea that a tendency to have only boys or girls might be genetically determined (Rodgers & Doughty, 2001). For example, data from the large National Study of Youth conducted by the US Department of Labor demonstrated that the sex of a given child did not depend on the sex composition of previous children in the family (Rodgers & Doughty, 2001). In the three-child families some evidence was found for a gender bias in sex composition (i.e., larger number of same-sex families than expected by chance). However, with the two- and four-child families included in the analyses, there was no evidence for a tendency for all-male families to produce males with a greater chance than all-female families.

Regarding parent gender configuration, data from the US Census Bureau has shown that the number of single-parent households increased from 25% in 2000 to 27% in 2010 (Lofquist, Lugaila, O'Connell, & Feliz, 2012). Both the number of single-mother (20%) and single-father (7%) households increased. According the same data, 0.4% of the family households consisted of same-gender parents (i.e., 0.1% male-male couples, 0.3%, female-female couples, Krivickas & Lofquist, 2011). In the Netherlands the percentage of single-parent households is slightly lower; 20% single-parent households in 2013 (single-mother: 16%, single father: 4%; CBS, 2014). In 2010 0.24% of family households in the Netherlands consisted of same-gender parents (0.2% female couples, 0.04% male couples; Bos & Van Gelderen, 2010).

Application to family process. In line with the family systems perspective (e.g., Whitechurch & Constantine, 1993) siblings have been found to have a profound effect on gender socialization (McHale, Crouter, & Tucker, 1999; Rust et al., 2000; Stoneman, Brody, & MacKinnon, 1986). However, the results from the small number of studies conducted are mixed with regard to the direction of effects.

First, there is evidence that siblings are an important source of observational learning and/or reinforcement of own-gender characteristics (e.g., Brim, 1958; Rust et al., 2000). In families with a mixed sibling gender configuration (i.e., boy-girl, girl-boy) the opposite-gender siblings reinforce cross-gender behavior in each other. In families with a same-gender siblings (i.e., girl-girl, boy-boy), the siblings are models

for gender-typical behaviors, leading to an increase of gender-typical behavior in the siblings. In this case the presence of an opposite-gender sibling may work as a gender neutralizer on the family environment (Brim, 1958; Rust et al., 2000).

Second, there is also evidence that siblings may serve as sources of social comparison (McHale et al., 1999). In families with mixed-gender sibling configuration parents have the opportunity for gender-differentiated parenting, which may provide a *more* gender stereotypical environment than families with same-gender siblings (McHale et al., 1999). In this case the presence of an opposite-gender sibling may work as a gender intensifier on the family environment. Recently, evidence has started to emerge that sibling gender configuration not only influences the siblings behavior and attitudes, but also has an influence on parental behaviors and attitudes, such as sensitivity (Van der Pol et al., 2014), gender stereotypes (Endendijk et al., 2013), and gender talk (Endendijk et al., 2014).

With regard to the influence of parental gender configuration on gender-related family processes, it is often thought that parents in nontraditional families (i.e., single-parent families, families with homosexual parents) hold less traditional attitudes about gender and are less traditional in their behaviors than parents in traditional families. Biblarz and Stacey examined these hypotheses in an extensive review of the literature (Biblarz & Stacey, 2010). They concluded that single-gender parenting (i.e., single-parent, homosexual parents) appears to foster more androgynous parenting practices in both mothers and fathers. Nontraditional families do not only employ different socialization practices, they are also models for nontraditional gender roles to their children. Single parents' behavior indeed is often less traditional, because these parents have to fulfil both gender roles of economic provider and caretaker. The same is true for homosexual parents, who are more likely to share the roles of caretaker and economic provider (Solomon, Rothblum, & Balsam, 2005; Stacey & Biblarz, 2001).

It seems reasonable to expect that children in these nontraditional families would also hold less traditional attitudes about gender and show less gender-typical behavior. However, the small body of evidence regarding this proposition is mixed. Meta-analytically there are no differences between children with heterosexual or homosexual parents with regard to sexual orientation, satisfaction with life, and cognitive and moral development (Allen & Burrell, 1997). In early childhood there are also no differences between children with heterosexual parents or homosexual parents with regard to gender-related attitudes and behavior (Golombok et al., 2003; Patterson, 1992). However, some studies show that in families with single-parent mothers, boys show less gender-typical behavior than boys from families with a father present (Russel & Ellis, 1991). In addition, girls from families with lesbian mothers are less gender-typical with regard to their play behavior, appearance, and activity preferences (Green, Mandel, Hotvedt, Gray, & Smith, 1986). Further, daughters with

lesbian mothers are more likely to reject stereotypical gender-related behaviors (Stacey & Biblarz, 2001).

Family gender composition in the GFP-model. The body of research on the influence of the family gender composition is small and results are mixed. However, the available studies do point in the direction of a direct influence of the family gender composition on both parent and child gender-related behaviors as well as a more indirect influence via gender cognitions on parent and child gender-related behaviors. Moreover, there might be a pathway from parent gender composition, to parent behavior, to child gender cognitions, to child behavior. In this pathway parent gender composition influences the gender role division and parental involvement in the family, these gender-related experiences are incorporated in children's gender schema, which in turn influence the child's gender-related behavior.

Extended Family Context

Background. Another factor from the social environment that might have an important influence on gender-related processes in the family context is the larger family context. The larger family context includes all relationships with family members other than parents and siblings, such as grandparents, uncles, aunts, and cousins. Grandparents might be the most important agents influencing gender-related processes in the family context, because they are generally the most involved extended family members (Luo, LaPierre, Hughes, & Waite, 2012). Data from a large nationwide US sample of grandparents has shown that more than 60% of grandparents provided some kind of care for their grandchildren (i.e., personal care, babysitting) and more than 70% did this for two or more years (Luo et al., 2012). In Europe 56% of grandparents provides some kind of care for their grandchildren over a 12-month period (Hank & Buber, 2009). Moreover, recent historical trends have increased the salience of the role of grandparents in the lives of grandchildren (Szinovacz, 1998). For example, life expectancy and financial security has increased, family sizes have decreased, and new ways of communication are available, all facilitating contact between grandparents and grandchildren (Szinovacz, 1998).

Application to family process. Very little is known about the influence of the larger family context on children's gender development (Blakemore et al., 2009). It is likely that the influence of the extended family is of a more indirect nature than the influence of parents and siblings. For example, gender-related experiences of parents with their own parents may have shaped parents' gender-related cognitions, which in turn influence their behavior towards their own children. There is evidence that mothers with mothers who worked outside the home when they were young had more gender-egalitarian beliefs than mothers whose own mothers did not work outside the home (Ciabattari, 2001; Davis & Robinson, 1991).

In addition, extended family members also provide children with gender-related experiences that get incorporated in the child's gender concepts. For example,

grandparents are closer to the children of their daughters than to the children of their sons (Fingerman, 2004). Grandparents might also provide their grandchildren with specific information about gender roles (Goodsell, Bates, & Behnke, 2010). A qualitative study showed that grandparents provided their grandsons with messages that fatherhood involves economically productive work, that work is a positive thing through which men develop relationships, and that women play a supporting role to men's activities in and with families. Granddaughters learned from grandparents that when fathers work, it takes them away from family relationships and therefore women may need to compensate for some fathers' inadequate fathering (Goodsell et al., 2010).

Cousins may also serve as socializing agents in a similar way as the peer group of a child. If the extended family is composed of mostly male cousins the group may be organized more around dominance (Pettit, Bakshi, Dodge, & Coie, 1990; Savin-Williams, 1979) and characterized by high-energy play or rough-and-tumble play (Maccoby, 1998), whereas if the extended family is composed of mostly female cousins the group may be more focused on intimate relationships, support, encouragement, and pretend-play (Maccoby, 1998; Underwood, 2003; Zarbatany & Pepper, 1996). Moreover, cousins may reinforce gender-typical behavior and punish cross-gender behavior in their cousins in a similar way as peers do. Last, it might be interesting to investigate the family gender composition (i.e., percentage of males or females born in a family over multiple generations) in relation to gender-related family processes. It is possible that a predominantly boy-family (e.g., father from all-boy family has two sons himself) constitutes a different gender-environment than families with both boys and girls.

Extended family context in the GFP-model. The influence of the extended family context on gender-related family processes is similar, but probably less prominent, to the influence of the nuclear family context. The extended family context influences the behavior of both parent and child directly, but also indirectly by providing gender-related experiences that are incorporated in parents' and children's gender concepts.

Socioeconomic Status

Application to family process. The family's socioeconomic status (SES) is an important contextual factor to take into account in a model on gender-related family processes. First, there is ample evidence that higher socioeconomic status is associated with less traditional attitudes about gender (Baxter & Kane, 1995; Bolzendahl & Myers, 2004; Dodson & Borders, 2006; Ex & Janssen, 1998; Kane, 1995). Women with higher educational levels have been found to have less traditional views about gender than lower educated women (Harris & Firestone, 1998). Higher educated men more often choose less traditional occupations and have less traditional attitudes about gender (Dodson & Borders, 2006). Education also strengthens both

women's and men's belief in gender egalitarianism (Bolzendahl & Myers, 2004; Kane, 1995). Moreover, longer hours in paid employment, location in middle-class position, and higher education are associated with more egalitarian gender attitudes for women and men although associations are generally stronger in women (Baxter & Kane, 1995).

Family SES also has a specific effect on parents' gender role division. In families with higher SES the division of gender roles is generally more equal, because the mothers in these families more often participate in the work force, have careers, and spend less time on housework and childcare than mothers from lower-SES families (Ex & Janssens, 1998; Harris & Firestone, 1998). There is indeed evidence that greater economic opportunities for women and female employment (especially full-time employment) are associated with more egalitarian gender views, because they provide women with greater power to dismiss traditional gender roles (Baxter & Kane, 1995; Bolzendahl & Myers, 2004; Cha & Thebaud, 2009). In addition, the extent to which young adults can explore various options in their transition to adult work and family roles is limited by lack of resources and wealth among working-class youth (Arnett, 2010). Last, changes in gender role divisions and corresponding changes in gender-related attitudes are particularly found in middle- and upper-class young adults, who generally pursue higher levels of formal schooling (Twenge, 1997). This influence of SES on gender role division in the family is likely to be mediated by parents' gender role cognitions, although this has not been tested empirically.

SES in the GFP-model. Little is known about the influence of SES on gender-related family processes. The studies that have been conducted have a correlational design and did not investigate the mechanisms behind the associations with SES. Most likely SES only has a direct effect on parents' gender cognitions, which in turn influences parental behavior in the family context, such as the gender role division. The effect of SES on children's gender cognitions and behavior is likely to be indirect and is mediated by parents' gender cognitions and gender-related behaviors. Therefore, for children there are only paths from the combined nuclear family context and extended family context (i.e., dark grey square) to children's gender cognitions and behavior.

Broader Society and Cultural Environment: Gender as a Social Construction

Background

According to social construction theories about gender gender-related knowledge or beliefs are socially constructed and vary by time, place, and culture (Gergen, 1985). Even the assumption that there are only two genders is socially constructed, since this assumption varies between cultures (i.e., some cultures assume that there are more

than two genders; Roscoe, 1999). The social construction perspective also states that gender roles are created by society, because they have important functional and explanatory purposes, which is consistent with the assumptions of social role theory (Eagly et al., 2000). In line with social construction theories, aspects of gender roles vary substantially from culture to culture (Best & Williams, 1997). For example, fathers in the Aka and Bifi forager tribes in Africa are highly involved in child-care while the women in these tribes perform the same activities as the men, and share responsibilities with them (Fouts, 2008). In contrast, in most other societies men are more likely to hunt, be at war, or work outside the home, whereas women are more often responsible for growing fruits and vegetables, cooking, or caring (Eagly et al., 2000).

A recent experimental study found evidence for the proposition that social categories like gender are indeed culturally constructed, and are not a priori grounded on biological or objectively visible facts (Diesendruck & Deblinger-Tangi, 2014). In this study toddlers had to complete a categorization task with several categories of people and animals in which for half of the children the familiarization phase (presentation of different exemplars of a given category) was accompanied by the use of novel labels ("Look, a Tirpali"), for the other half of the children the experimenter called attention to the picture ("Look at this"). It was found that without the support of linguistic labels toddlers failed to identify categories of people with high visual saliency (i.e., gender, race), whereas there were no differences in toddlers' ability to identify animal categories in the label and no-label conditions. The authors concluded from these findings that labels apparently are critical for educating children which categories of people are relevant in a given society.

A major concern with social construction theories of gender is its rigorous claim that gender is created (almost) entirely by society, despite the accumulation of evidence that biological processes are also implicated in gender development. Another perspective that links culture to family processes is the developmental niche framework (Super & Harkness, 2002). In this framework Super and Harkness focus on the influence of culture on parenting and child development. With regard to gender development in the family context they argue that various operational subsystems in the child's environment such as the historically constituted customs and practices of child care and child rearing, and the psychology of the caretakers, particularly parental 'ethnotheories' (i.e., values and practices of a culture) play a directive role in parenting and child development. Within the field of children's gender development researchers, inspired by social constructionist theories or cultural frameworks, usually study the historical and cultural differences in gender roles, the gender socialization in the family and in larger cultural system, and the combined influence of gender, race, class, and culture.

Application to family process

There is a large body of research demonstrating that gender-related aspects within the larger societal and cultural environment, such as women's educational and employment opportunities, or state policies promoting gender equality, for an important part shape people's gender attitudes by providing them with gender-equal or gender-unequal information and experiences (Baxter & Kane, 1995; Charles & Bradley, 2009; Manago, Greenfield, Kim, & Ward, 2014; Williams & Best, 1990; Yu & Lee, 2013). However, the evidence with regard to the direction of effect seems inconclusive. Some studies show that in societies were gender equality is high or women's dependence on men is low (i.e., social, economic, and interpersonal) the highest levels of egalitarianism in gender attitudes are found (Baxter & Kane, 1995; Williams & Best, 1990). In contrast, another study found that sex segregation by field of study is more pronounced in advanced industrial societies than in developing and transitional societies, which is explained by the strong Western cultural emphasis on individual self-expression leading individuals to express their essential male and female selves via choice of study field (Charles & Bradley, 2009). Another study also found evidence for the persistence of gender attitudes in egalitarian societies, indicating that in countries with more educational and economic opportunities for women people have positive attitudes toward mothers' participation in the labor market, but less positive attitudes about gender equality in the family context (Yu & Lee, 2013). The authors proposed that the lower approval of gender equality in the home might be because individuals in a highly gender-equal society feel a need to preserve the gender system in the private domain. Yet other studies that have been conducted on gender stereotypes in different cultures usually find only small variations and a large overlap between gender stereotypes cross-culturally (e.g., Williams & Best, 1990; Williams, Satterwhite, & Best, 1999). In sum, these studies demonstrate the complexity of gender attitudes and the different effects culture can have on specific aspects of people's gender attitudes.

Although gender-related family processes can be studied from a cultural psychological perspective, very few studies actually employed such a perspective (Gibbons, 2000). We know of one recent study that longitudinally examined mothers' gender-differentiated emotion socialization practices in African American and European American families and relating the cross-cultural differences to mothers' beliefs about emotions (Nelson, Leerkes, O'Brien, Calkins, & Marcovitch, 2012). It was found that African American mothers displayed more gender-differentiated emotion socialization practices than European American mothers, which could be partially accounted for by their belief that boys will encounter more negative social consequences if they display negative emotions.

There may also be cultural variation in the way parents treat boys and girls. Societies vary substantially with regard to gender equality. Data on the gender gap (gender differences in health, life expectancy, access to education, economic

participation, salaries, job type, and political engagement) showed that Scandinavian and Western European countries generally have the lowest gender gap in the world (World Gender Gap Index, 2013), and that North-American countries have a somewhat bigger gender gap. Latin-American and Asian societies have intermediate levels of gender inequality. The largest gender inequality can be found in Middle-East and North-African societies. From the perspective of social role theory (Eagly et al., 2000; Hosley & Montemayor, 1997) one might argue that in countries with a larger gender gap, parents will differentiate more between their sons and daughters to prepare them for adult life in a society with large differences in gender roles. In line with this reasoning one would expect large differences in the behavior of boys and girls in societies with a high level of gender inequality. There is indeed evidence that the gender difference in math scores disappears in gender-equal societies (Guiso, Monte, Sapienza, & Zingales, 2008).

It seems likely that culture has an important influence on the gender stereotypes of parents and children, because of the variations in gender role divisions across cultures (Best & Williams, 1997). When gender is a salient issue in a society, because of strict division on the gender roles of men and women, these gender-related experiences are likely to be incorporated in its inhabitants' gender schemas (i.e., Bem, 1981, 1983; Martin & Halverson, 1981, 1987).

Another cultural concept that is relevant for the cultural differences in gender roles is the dimension of masculinity/femininity that was described by Hofstede in his book *Culture's Consequences* (1980). This dimension refers to the division of roles between men and women in a society. A masculine society is characterized by large differences in gender roles. Characteristics like competitiveness, assertiveness, materialism, ambition, and power are highly valued in men, whereas characteristics such as modesty and tenderness are valued highly in women. Feminine societies differentiate less between male and female gender roles. In these societies modesty, tenderness, and concern with the quality of life are highly valued by and for both men and women. It is proposed that societies values with regard to femininity or masculinity are implicated in the construction of gender differences (Hofstede et al., 1998), possibly via influencing peoples cognitions about gender.

Broader society and culture in the GFP-model

Studies on the influence of the larger society and cultural environment on gender-related family processes provide evidence for a pathway from culture, to societies gender roles, to parents' gender cognitions, to parents' gender-related behavior. Further, societal gender roles and degree of masculinity or femininity in the culture provide both parent and child with gender-related experiences that influence their gender cognitions.

Future Directions and Conclusion

Our review of the literature on gender in the family context and our Gendered Family Process model highlight the involvement of biological, social, and cognitive factors in gender-related family processes. It also reveals important gaps in the literature that need to be addressed in future research. In all three domains (i.e., biology, socialization, cognition) of research on gender development there is an urgent need for more longitudinal studies including both mothers and fathers and preferably starting before birth and continuing into puberty. Before birth hormones in amniotic fluid, maternal blood, or umbilical cord blood can be measured (Hines, 2010; Van de Beek, Thijssen, Cohen-Kettenis, Van Goozen, & Buitelaar, 2004), to examine the influence of prenatal testosterone on gender development in typically developing children. In addition, both mothers' and fathers' hormonal profiles can be assessed before actual parenthood to investigate the direction of effects regarding the association between parental testosterone levels and parenting behavior. After birth parental testosterone levels can be related to both quantitative (i.e., parental involvement) and qualitative aspects of parenting behavior (i.e., sensitivity, emotional availability) as well as more specific gender socialization practices of parents. It is important to use observational rather than self-report measures of parents' gender socialization practices, since gender socialization practices in the family context are generally very subtle and often happen outside parents' conscious awareness (Culp et al., 1983).

These studies should employ a cross-lagged design (i.e., both parent and child behavior assessed at multiple time points) in which the complex issue of child-to-parent and parent-to-child reciprocal effects with regard to gender-differentiated parenting could be examined appropriately. With such studies it is also possible to empirically test the widely held assumption that parental gender socialization practices have an important impact on the development of gender-typed behavior (Archer & Lloyd, 2002). However, the focus should not only be on examining the influence on *gender differences* between boys and girls but also on *individual differences* within boys' and girls' gender development (McHale et al., 2003). When the assessments are extended into puberty it is possible to examine the effects of biological, social, and cognitive changes on gender-related family processes, since puberty is a period of "gender-intensification" (Hill & Lynch, 1983) in which boys and girls become increasingly different as a result of the convergence of biological, social, and cognitive changes.

A specific direction for future research in the biological domain of gender development arises from the fact that studies in this domain are hampered by the difficulty (i.e., ethical and methodological) to conduct experiments in which testosterone levels are externally manipulated. An opportunity to study the effects of testosterone experimentally is provided by adolescents or adults with gender identity

disorder who receive hormonal treatment to suppress puberty or to enhance cross-gender secondary sex characteristics. It might be interesting to examine the parenting quality (e.g., sensitivity) of these individuals before and after the hormonal treatment or to compare parenting quality of individuals who have received the hormonal treatment with matched controls who have not yet received this treatment. A paradigm that can be used for this is the Leiden Infant Simulator Sensitivity Assessment (LISSA; Voorthuis et al., 2013) that makes use of an infant simulator (RealCare Baby II-Plus; Realityworks, Eau Claire, WI, USA).

A specific direction for future research for studies with a social approach toward gender development arises from the fact that studies in the social domain often adopt a between-family design to examine differences in parenting boys and girls. An important limitation of this approach is that differences in parenting practices towards boys and girls do not necessarily reflect a gender difference, but can also be caused by other differences in family characteristics, such as family-interaction patterns. It is of vital importance to examine gender-differentiated parenting *within* families to account for such factors. The crucial question to be addressed in the within-family design is whether socialization differences between boys and girls are also found when they grow up in the same family (i.e., when the same parents socialize both a boy and a girl). Only then can we be more sure that systematic variations in parenting boys and girls cannot be ascribed to other family variables. More within-family studies are needed to disentangle the effect of child gender on parenting practices from between-family effects.

In studying gender-related processes in the family context, future researchers should move beyond investigating children's dyadic interactions with parents or other members in the nuclear or extended family context. Triadic interactions are now widely used to investigate family dynamics and it has been consistently found that fathers' and mothers' behaviors with their child differ when observed in dyads versus triads (e.g., McHale, Fivaz-Depeursinge, Dickstein, Robertson, & Daley, 2008; Sacrano de Mendonça, Cossette, Strayer, & Gravel, 2011). It might be interesting to examine if mothers' and fathers' gender socialization practices are also different in triadic compared to dyadic interactions. It may even be possible to extend the triadic interaction paradigm to quadratic interactions to directly examine the effect of family gender configuration on family interaction patterns. Last, our review underscores the necessity to further investigate the influence of the extended family context and broader contextual influences, like SES, societal perspectives on gender roles, and the degree of a culture's masculinity or femininity on the gender-related processes in the family context.

In studies with a cognitive approach toward gender development it is often assumed that there is a link between an individual's gender stereotypes and their actual gender-related behavior. However, the literature providing evidence for this proposition is scarce for parents as well as for children. More studies should

investigate the link between attitude and behavior in both parents and children. These studies should incorporate implicit measures of gender stereotypes, since for controversial subjects like gender or race implicit stereotypes appear to be better predictors of behavior (Nosek et al., 2002a). Future studies should also examine which gender-related experiences in the family-context influence gender stereotypes in both parent and children, since little is known about the internalization of these experiences into gender concepts. Gender stereotypes consist of different components (Martin, Wood, & Little, 1990) so it is possible that specific gender-related experiences act on specific stereotype components.

To conclude, research to date has shown that gender *is* an important organizer of family processes. Gender shapes biological, social, and cognitive processes at both the parent and child level. In addition, the family is part of a larger context consisting of the extended family system, the socioeconomic context, and the larger society and culture, which each have a unique influence on gendered family processes. However, to date much is unclear about the mechanisms behind gender-related processes in the family context. Future studies should take into account the complexity of gendered family processes, by using advanced research designs, methods, and analytic approaches. Only then we can fully understand *how* gender influences family processes.